



Chapter III

The Factor Analysis and Comparison in Silk Weaving System in The Model Village

In this chapter, the analysis tables and explanation will describe the development in marketing and production process in the model village, Noanjig. There are the progresses in production capacity, performance and profit ratio.

First, the operational or production processes will be enumerated into many steps. Those processes are the illustrations for cluster analysis.

Next, to find out what is the major factors or information marketing and revenue and profit recognition system in Noanjig Weaving Group, there are the analysis tables of the growth in export price per unit and the products price and profit comparison in the example village.

The above results would be further analyzed in the next chapter to show how marketing knowledge and product development make an impact on competitive advantage in silk weaving system in Noanjig village and in Thailand.

3.1 The Operational Processes in Noanjig Village: Cluster Analysis

Because Diamond model is assumed on a Macroeconomic scale but neglect the Microeconomic one, cluster performance analysis should fulfill this loophole.

Cluster performance analysis is used to explain the chain of supply both horizontal and vertical for the village. It can illustrate the internal linkage in the model village and the external relationship with many organizations.

3.1.1 The Information of Noanjig Weaving Group

Noanjig weaving group is located at Noanjig village, Ta-ong sub-district, Muang district, Surin province. They have around 20 experienced and skillful weavers. The silk weaving group leader is Mrs. Juntee Boonkam. This weaving group was set up 5 years ago. Before setting up, they have to make silk product on their own household.

Noanjig weaving group participates in OTOP project in 2003. This project about Silk Product Development Research is the co-operation between Co-operative Supporting Department, Ministry of Agriculture in Co-operation and The Golden Jubilee Royal Goldsmith College, Office of Vocational Education Committee Board, Ministry of Education to work under the OTOP project in 2003. It is the action research in the field of silk weaving about the process of transferring production technology to producers which leads to the silk product development. This development process consists of the training about design, natural dyeing techniques, weaving techniques, weaving tools maintenance and also marketing and group management. This project has 8 example villages and another 7 network villages. Noanjig village is one of the network villages in the project. The network villages participated in the training course, but not in full scale as the example village. They tried to improved production quality and developed their product to meet customers' needs after learning from the project. Therefore, most of improvements in the model village are created, developed and retained from the involvement in this project.

Besides taking part in that project, Noanjig village also worked with other government organization. Mulberry and Silk Research Center, Surin province, is the support organization for natural dyeing process.

After illustrating backgrounds and some information of Noanjig village, the next paragraph will start to explain about silk weaving processes.

There are weaving processes that usually use in the model village. There is the chart of the processes to illustrate the making of silk products.

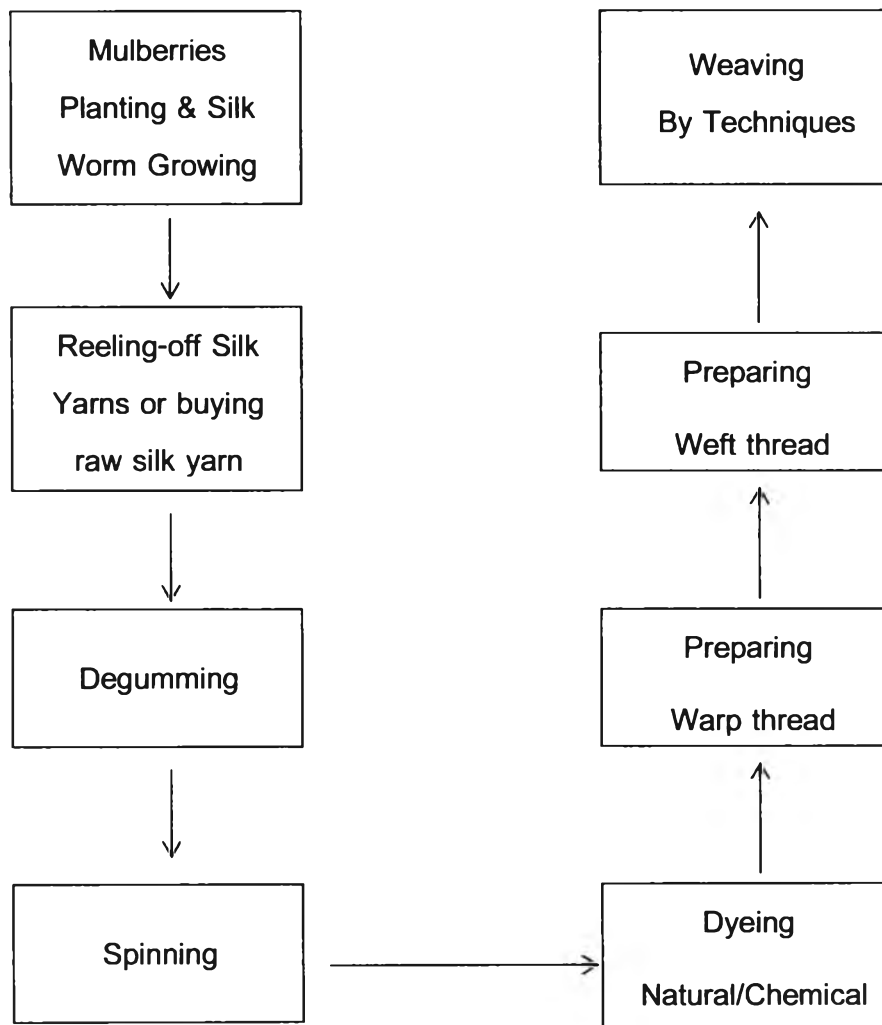


Figure 9: The Silk Weaving Processes

The Silk weaving processes in Noanjig have many steps, each step has details. Here below are the explanations for each step (data from the interviews with weavers in Noanjig and the research paper "Silk Product Development Research", 2003).

First, mulberries planting and silk worm growing, silk worm or *Bombyx Mori* in scientific name is one breed of butterfly that produces strong and shiny fiber or *silk* yarn. In Noanjig, the Golden silk breed is used for their silk yarn. The color of silk yarn is Gold and it will create the Cream color when become silk shawls.

Then, reeling-off silk yarn or buying raw silk yarn, this is the process for providing silk yarn from silk cocoon. In the past, weavers reeled off silk yarn using their hands. Nowadays, most of silk yarn used is purchased from the silk yarn shop, Ruen Mai Bai Mon, founded by Mr. Ar-thorn Juntararojwong, is the only shop in Muang district, Surin province, which can provide Golden Silk Yarn for Noanjig weaving group. The relationship with this shop is very good.

Next, degumming, silk yarn in the cocoon is covered by the sticky or glutinous substance called *Sericin*. It has to be degummed or removed to prepare silk yarn for the next step. Silk cocoon bought from the shop will be boiled in hot water with alkaline substance.

Hence, spinning, after being degummed, silk yarn should be spun because this process strengthens silk thread. At least 2 silk threads are put together and spun by using spinning tool called *Rahat* to become twisted yarn.

Next, dyeing (Natural/Chemical), in Noanjig village, the dyeing process of silk shawls use only natural-dyed color. It adds uniqueness, value and environmental awareness to silk shawls which can be recognized by high class customers. Most of natural dye color can be found in local area, some of them have to be bought or dyed elsewhere, for example, Indigo. The support organization for natural dyeing process is Mulberry and Silk Research Center, Surin province. The examples of natural-dyed colors are as followed. Ebony or Ma Klua creates Black or Dark Brown color, Pradoo creates Light Brown color, Lac creates Red color, Indigo or Kraam creates Blue color, Anchan flower creates Purple Blue, Yor root creates Orange color and natural degummed silk yarn normally create cream color. These natural colors are also combined to make more colors, for example, Ebony and Lac create Brownish Red color, Anchan and Lime/Calcium Carbonate create Green color, Ebony and Pradoo create Brown color.

Then, preparing warp thread, the color-dyed silk yarn is twined into the tool called *Ug*. This silk thread will be ready for setting up warp thread on the weaving equipment called *Loom or Gee*. Then warp thread is inserted or passed through the hole of warp setting tool called *Reed or Feum or Funwee*. Reed is an equipment with

rectangular shape in wooden frame with steel spokes. The length of reed will determine the width of silk shawl, regularly range between 90-105 cm. Normally, 2 silk yarn will be inserted into 1 spoke.

Next, preparing weft thread, weft thread will be prepared in the tool called *Shuttle or Krasuay*. Then, warp threads are divided by the tool called *Harness or Ta-kor* to make patterns for weaving by using weft thread. This process is very important because it will determine the patterns of silk shawls.

Finally, weaving by techniques, after all equipments and tools are set up, weaving process is started. The general weaving technique is to put weft thread within *Shuttle* through the warp thread divided by *Harness* by stepping on the tool called *Peddles or Paenyeab* which is linked to each harness with the same amount. This general technique creates patterns for example, plain weave or twill weave. The special technique, for example, is Brocaded silk shawls. In Surin general silk weaving technique, the average amounts of harnesses are 4-6 pieces, but this special technique requires those equipments up to 8-10 pieces. The amounts of harnesses are equal to peddles'. This makes weaving process much more hard and complicated and requires more focus from weavers. But consequent results, the details of patterns, will much more improve and make silk shawl extremely beautiful. These improvements in weaving technique and skill are the result of participation in OTOP project.

3.1.2 The Operational Processes: Information and Background of Cluster

In Noanjig village, the operational or production processes will be divided into many steps. Those processes are the illustrations for using in cluster analysis. Information is collected from 20 weavers in Noanjig village and also from the leader of silk weaving group by an interview and questionnaire. The sample group is the weavers who have both skills and experiences enough to finish the receiving tasks given by the leader.

The production process begins with the customers' order. The group's leader, Mrs. Juntee Boonkam, receives details of order from customers, for example, patterns, colors and size of silk shawls.

Then, she assigns appropriate jobs to experts weavers. The above silk weaving processes have their own experts for each step.

First group of expert weavers are good at and responsible for the processes of reeling-of silk yarns, degumming, and spinning. Those jobs are routine and quite easily, therefore, those weavers use less effort and energy than other job to finish. These jobs are done by senior weavers who can not work too hard.

The second group of expert weavers is good at and responsible for the processes of dyeing, especially natural colors. This process requires extreme knowledge and experience to reproduce the same color from natural dyed-substance that often make slight color difference in each color dyeing.

The third group of expert weavers is good at and responsible for the processes of preparing warp and weft thread. These complicated and time-consuming processes require weavers who specialize in planning and setting up patterns in warp and weft thread on the loom.

The fourth group of expert weavers is good at and responsible for the processes of weaving to the assigned techniques. This is the biggest group in the model village because the weavers with just basic or intermediate weaving skill, medium level of experience and, most important, focus on weaving can handle and manage their jobs.

Those weavers in the model village are divided in 4 categories as shown below.

Table 7: No. of Silk Weavers in Noanjig: Divided by Fields of Expertise

Fields of expert in silk weaving process	No. of weavers
1. reeling-of silk yarns, degumming, and spinning	3
2. dyeing, especially natural colors	3
3. preparing warp and weft thread	4
4. weaving to the assigned techniques	10
Total	20

Weavers in each group work together in their own field of expertise. They also exchange knowledge and support those in the other group. All weavers live in the model village, Noanjig village. They are connecting to one another as if it is a web in the model village.

These analysis results will be further discussed and amplified in the next chapter about cluster performance analysis.

After cluster performance has been analyzed, the subsequent topic is production and performance factors' comparing and analysis in the model village.

3.2 The Analysis and Comparison of Factors in Silk Weaving Industry in Noanjig Village

To understand the whole scenario of silk weaving processes in the model village, the analysis and comparison of factors, production and performance, are necessary be included.

Starting with the performance analysis, this topic will demonstrate the essential figures about price difference, before and after joining the OTOP project, in the model village, in Table 8 and some part of Table 9. Then, production factors analysis and comparisons will be illustrated from Table 9 to Table 11.

Table 8: The Price Comparison of Silk Products in Noanjig Village

Before developed by OTOP project		After developed by OTOP project	
Type of Products	price Bht/2 m.	Type of Products	price Bht/1 m.
1. Traditional men bathing cloth	600	1. Ikat shawls with applied pattern	1,400
2. Traditional cut-length cloth with local styles	1,000 (500/1 m.)	2. Brocaded shawls with applied pattern	1,500
		3. Brocaded and Ikat shawls with applied pattern	1,600

These results show the increase in *price per unit* for silk products, traditional silk cloth comparing with applied techniques and patterns shawls and scarves. These improvements are caused by the developments in OTOP project described earlier in this chapter.

To understand this change thoroughly, the next tables will describe in more details.

Table 9: The Production Capacity and Performance Report of Silk Production in Noanjig Village: Before and After OTOP Project

Items	Quantities	
	Before	After
1. No. of eligible weavers	15	20
2. Average time for weaving 1 piece of silk cloth (1 shawls = 2 meters)	3 days	2.5 days
3. No. of silk cloth weaving in 1 month per 1 person	10	12
4. Price of the example silk shawl (baht/2 m.)	800	1,400
5. Cost of the example silk shawl (baht/2 m.)	750	1,135
6. Profit of the example silk shawl (baht/2 m.)	50	275

There are 2 major items in production capacity categories, item no. 1, 2. Both items are directly influenced from participating in the training courses in OTOP project. The increase in no. of eligible weavers, item no.1, means that the model village has more production capacity in their skillful workforces. The decrease in average time for weaving 1 piece of silk cloth, item no.2, also relates to the weaving skill development from OTOP project. This fact leads to the increase in the no. of silk cloth weaving in 1 month per 1 person, item no.3. The price of the example silk shawl, baht/2 m., item no.4, reflects the average price in Table 8. The cost of the example silk shawl, baht/2 m., item no.5, will be explained in details in Table 10 and 11. Finally, the profit of the example silk shawl, baht/2 m., item no.6, is the conclusion of the production capacity and performance report of silk production. There is significant increase in profit from silk cloth production after engaging OTOP project.

From Table 9, item no.5, the cost of the example silk shawl is explained in depth by Table 10.

Table 10: The Production Cost of Traditional Silk Shawl in Noanjig Village

<u>Traditional silk shawls</u>	
Weight	120 g.
1.1 Silk yarn cost	290 Baht (Silk yarn 1 Kg. = 800 Baht)
1.2 Degumming cost	15 Baht (Degumming exp. 1 Kg. = 30 Baht)
1.3 Spinning cost	60 Baht (Spinning 1 Kg. = 120 Baht)
1.4 Total chemical dyeing cost	50 Baht
1.5 Preparing warp thread(1)	
Total expense/1 shawl	20 Baht/2 m.
1.6 Preparing warp thread(2) (Setting up warp thread in reed)	
Preparing warp thread(2)	150 Baht/10 shawls
Total expense/1 shawl	15 Baht/1 shawl
1.7 Preparing weft thread (Setting up patterns for weaving weft thread)	
Total expense/1 shawl	100 Baht/1 shawl
1.8 Weaving by techniques***	
weaving wage/1 shawl	200 Baht/4 days
Total cost/1 shawl	<u>750</u> Baht
*Traditional silk yarn cost calculation	
**Traditional chemical silk yarn dyeing cost calculation	
***Traditional weaving wage calculation	

The cost of traditional silk shawl shown in Table 10 is the same as the cost of the example silk shawl before entering OTOP project in Table 9, item no.5.

Therefore, the cost of applied silk shawl in Table 11 is the explanation of cost of the example silk shawl after engaging OTOP project in Table 9, item no.6.

Table 11: The Production Cost of Applied Silk Shawl in Noanjig Village

<u>Applied pattern(Ikat) silk shawl (Natural Dyeing)</u>		
Weight	120	g.
1.1 Silk yarn cost	500	Baht (Silk yarn 1 Kg. = 1,400 Baht)
1.2 Degumming cost	15	Baht (Degumming exp. 1 Kg. = 30 Baht)
1.3 Spinning cost	60	Baht (Spinning 1 Kg. = 120 Baht)
1.4 Total natural dyeing cost	25	Baht
1.5 Preparing warp thread(1)		
Total expense/1 shawl	20	Baht/2 m.
1.6 Preparing warp thread(2) (Setting up warp thread in reed)		
Total expense/1 shawl	15	Baht/1 shawl
1.7 Preparing weft thread (Setting up patterns for weaving weft thread)		
Total expense/1 shawl	100	Baht/1 shawl
1.8 Weaving by techniques(Ave. 8 hrs./1 day)		
Estimated weaving wage	100	Baht/1 day
weaving wage/1 shawl	400	Baht/4 days
Total cost/1 shawl	1.135	Baht

After reviewing Table 10 and 11, two main figures that make the costs of applied silk shawl higher than the traditional one are silk yarn cost and weaving wage. The first figure, silk yarn cost, is the main change that Noanjig village made after participating OTOPT project. The Golden silk yarn is the recommended silk yarn instead of importing silk yarn from neighboring countries. The second figure, weaving wage, is the conflicted figure. The average time for silk weaving may slightly decrease or stay unchanged. The estimated weaving wage is significantly increasing from 50 Baht per day to 100 Baht per day, with the awareness of rising in weaving skill. The natural dyeing cost is not much higher than chemical dyeing cost, except for some color, for example, indigo dyeing which cost 500 Baht per 1 Kilogram of degummed silk yarn. The other expenses are the same amount for both kinds of silk shawls.

From the above comparison, the costs of product after developed by OTOP project are higher than the ones before developed. The most important figures, *price and profit*, are still the advantage and the strengths factors for the product after developed by OTOP project.

After many factors are analyzed and compared in this chapter, those results would be further analyzed in the next chapter to show how marketing knowledge and product development make an impact on competitive advantage in silk weaving system in the model village and in Thailand.